

**WHAT IS CLAIMED IS:**

1 A direct vessel injection-type pressurized light water reactor (DVI-PLWR), in which an emergency core cooling water is  
5 directly injected into a reactor vessel, the DVI-PLWR comprising:

a plurality of longitudinal corrugations vertically arranged around each of an inner surface of a pressure vessel of the reactor vessel and an outer surface of a core barrel of  
10 the reactor vessel at regular intervals, so that a vertical groove is formed between two neighboring corrugations.

2. The direct vessel injection-type pressurized light water reactor (DVI-PLWR) according to claim 1, wherein each of  
15 the corrugations is bisected along a perpendicular bisector into two inclined surfaces, such that each corrugation has a V-shaped cross-section, with the two inclined surfaces meeting at a predetermined angle of intersection.

20 3. The direct vessel injection-type pressurized light water reactor (DVI-PLWR) according to claim 2, wherein each of the corrugations is provided with a welding flange along an outside edge of each of the two inclined surfaces.

25 4. The direct vessel injection-type pressurized light

water reactor (DVI-PLWR) according to claim 2, wherein each of the corrugations is provided with a plurality of holes which are formed along each of the two inclined surfaces at regular intervals.

5

5. The direct vessel injection-type pressurized light water reactor (DVI-PLWR) according to claim 4, wherein each of the holes has a diameter of  $1/2$  of a width (h) of each of the two inclined surfaces, and the regular intervals of the holes  
10 are set such that a distance between centers of the holes is equal to the width (h) of each of the two inclined surfaces.

6. The direct vessel injection-type pressurized light water reactor (DVI-PLWR) according to claim 1, wherein each of  
15 the corrugations has a length not less than seven times a diameter of a cold leg, and the corrugations are vertically arranged around the inner surface of the pressure vessel and the outer surface of the core barrel, such that a length ratio of an upper section to a lower section of each of the  
20 corrugations is set at 4:3 when the upper and lower sections of the corrugation are sectioned on the basis of a central axis of the cold leg.